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METEOROLOGICAL DATA REPORT

AEROBEE NASA 4.144 DG (NRL NB 3.165)
(18 July 1966)

BY

MARJORIE MCILARDIE HOIDALE

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ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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DA Task IV650212A127-02

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ABSTRACT

Meteorological data gathered for the launching of Aerobee NASA 4.144 DG (NRL NB 3.165) are presented for the National Aeronautics and Space Administration and the U. S. Naval Research Laboratory and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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INTRODUCTION

Aerobee NASA 4.144 DG (NRL NB 3.165) was launched by Naval Ordnance Missile Test Facility personnel, White Sands Missile Range (WSMR), New Mexico, at 2036 hours MST, 18 July 1966.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, Atmospheric Sciences Laboratory, White Sands Missile Range, New Mexico. The Ballistic Meteorologists for this firing were Marjorie M. Hoidale and Ivan I. Layton.

DISCUSSION

Wind data for the first 4,000 feet above the surface were obtained from a Double-Theodolite Wind Velocity Computer System (1). Balloons released at the launch site were observed and tracked from a 2,000-foot baseline. Continuous angular data were transmitted from two electrically instrumented theodolites to a computer where the data were reduced to obtain a velocity-vs-height relationship. The computer output drives two recorders which trace north-south and east-west components on a specially designed wind velocity computer ballistic chart. It is possible to read directly from the chart both the mean wind component values and the mean ballistic wind components in the various ballistic layers.

Temperature, pressure and humidity data, along with upper wind data from 4,000 to approximately 100,000 feet above the surface, were obtained from standard rawinsonde operations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by equal-area method.

Data appearing in Tables X, XI, and XII, are based on the L. D. Duncan (2) theory. The "Predicted Impact" includes, when applicable, an adjustment of impact based on the experience of the Ballistic Meteorologists and the forecast of firing time wind conditions.

REFERENCES

1. "Double-Theodolite Wind Velocity Computer", UNCLASSIFIED, U. S. Army Signal Research and Development Laboratory, Fort Monmouth, New Jersey, July 1959.
2. Duncan, L. D. and R. J. Ensey, November 1964: "Six Degree of Freedom Digital Simulation Model for Unguided Fin-Stabilized Rockets". ERDA-196, Environmental Sciences Directorate, United States Army Electronics Research and Development Activity, White Sands Missile Range, New Mexico.

PAYLOAD	Includes Nosecone Weight	340.5	Pounds
* UNIT WIND EFFECT	Cross Range	3.22	Miles/MPH
TOWER TILT EFFECT		3.79	Miles/MPH
BURNOUT	Velocity	17.03	Miles/Degree
	Altitude	5,270	Feet/Second
	Time	120,146	Feet MSL
PEAK	Altitude	51.8	Seconds
	Time	105.7	Miles MSL
TOTAL FLIGHT TIME		222.0	Seconds
CORIOLIS EFFECT		480.0	Seconds
	West	4.75	Miles

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES
AEROBEE NASA 4.114 DG (NRL NB 3.165)

* An empirical correction (85 percent of the total) has been made to the cross-unit wind effect. This correction was determined from statistical studies.

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTOR
143- 250	.185
250- 400	.115
400- 600	.100
600- 800	.062
800-1200	.053
1200-1600	.031
1600-2000	.025
2000-2500	.029
2500-3000	.023

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTOR
3000- 3500	.019
3500- 4000	.016
4000- 5000	.031
5000-10000	.096
10000-15000	.056
15000-20000	.033
20000-25000	.023
25000-30000	.017
30000-35000	.014

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTOR
35000- 40000	.009
40000- 45000	.006
45000- 50000	.012
50000- 60000	.010
60000- 70000	.009
70000- 80000	.007
80000- 90000	.008
90000-100000	.010

TABLE II. BALLISTIC FACTORS
AEROBEE NASA 4.144 DG (NRL NB 3.165)

TIME IN MINUTES	ANEMOMETER-MEASURED WIND	
	Speed (Knots)	Direction (Degrees)
T - 15	12.5	145
T - 10	12.5	146
T - 5	13.0	142
T - Time	14.0	145
T + 5	14.0	145
T + 10	14.0	144
T + 15	14.0	142

TABLE III. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION
AEROBEE NASA 4.144 DG (NRL NB 3.165)

NOTE: Wind speeds and directions are 5-minute averages
centered at indicated times.

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR											
	1745 MST		1805 MST		1835 MST		1855 MST		1920 MST		1935 MST	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143- 250	3.0S	0.5E	1.5S	4.5E	6.0S	8.5E	6.5S	6.5E	7.5S	8.5E	7.0S	8.5E
250- 400	1.0	3.0	0.5	4.5	4.5	9.5	5.0	6.0	6.5	11.0	9.0	11.5
400- 600	0.5N	7.5	0.5	4.0	5.0	7.0	7.0	6.5	6.5	12.5	10.5	15.0
600- 800	0.5	6.0	2.0	4.5	7.0	7.0	10.5	6.5	7.0	11.0	11.5	16.0
800-1200	3.0S	7.0	4.5	4.5	6.5	8.0	9.0	5.5	6.5	10.5	9.5	14.0
1200-1600	6.0	8.5	5.0	6.5	11.0	7.0	7.0	5.5	5.5	8.5	11.0	12.5
1600-2000	5.0	9.0	5.5	7.0	11.0	7.5	5.5	5.0	8.5	9.0	6.5	7.0
2000-2500	4.5	4.5	6.0	5.0	5.0	6.5	7.5	5.0	8.0	5.0	6.5	7.5
2500-3000	4.0	6.0	6.0	4.5	5.0	7.5	4.0	7.5	4.5	4.5	7.0	5.5
3000-3500	6.0	6.0	5.0	4.0	3.0	4.0	3.5	1.5	7.5	4.0	7.5	7.5
3500-4000	7.0	5.5	5.5	3.5	2.5	2.5	4.0	1.0	9.0	5.0	8.5	6.0

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA (DOUBLE THEODOLITE METHOD)
AEROBEE NASA 4.144 DG (NRL NB 3.165)

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR											
	1950 MST			2005 MST			2018 MST			2025 MST		
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
143- 250	8.0S	8.0E	8.5S	9.5E	8.5S	10.5E	10.5S	8.5E	9.5S	10.0E	8.0S	10.0E
250- 400	7.5	11.5	8.5	13.0	8.5	13.0	11.0	13.5	11.0	13.5	7.5	14.5
400- 600	8.5	15.0	9.0	12.5	10.5	14.0	10.5	14.5	13.5	14.5	11.5	19.0
600- 800	10.0	15.5	11.0	14.5	11.0	12.0	9.5	9.0	10.0	11.5	14.0	14.5
800-1200	9.5	13.0	10.0	10.5	11.5	8.5	10.5	8.0	14.0	11.0	14.0	12.5
1200-1600	10.0	12.0	12.0	11.5	13.5	8.0	12.5	5.5	13.5	7.5	18.5	8.0
1600-2000	8.0	7.0	9.5	7.5	12.5	6.5	15.5	6.0	12.5	8.0	12.5	6.5
2000-2500	6.5	5.0	7.5	5.5	12.0	5.5	11.0	7.5	12.0	6.5	16.5	11.0
2500-3000	7.5	5.5	11.5	5.5	12.0	5.0	14.0	6.5	15.5	8.5	16.0	6.0
3000-3500	8.0	5.5	14.0	7.0	7.5	1.0W	14.5	5.5	6.0	0.0	7.0	2.0W
3500-4000	10.5	6.0	16.5	7.0	M*	M	M	M	15.0	3.0E	7.0	2.0

* M = Missing

TABLE IV.
PILOT-BALLOON-MEASURED WIND DATA
(DOUBLE-THEODOLITE METHOD)
AEROBEE NASA 4.144 DG (NRL NB 3.165)

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS	
	N-S	E-W
4000- 5000	1.5S	5.0W
5000-10000	5.ON	1.0
10000-15000	10.5	4.0E
15000-20000	2.5	13.0

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS		MEAN WIND COMPONENTS IN KNOTS					
	1945 MST		1445 MST		1730 MST		2045 MST	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
4000- 5000	5000	2.5S	3.0E	0.5S	2.0E	10.0S	0.0	0.0
5000- 10000	10000	1.ON	7.0	1.5	5.0	1.ON	6.0E	6.0E
10000- 15000	15000	7.0	8.5	6.5N	11.0	7.5	9.0	9.0
15000- 20000	20000	1.5	8.0	1.5	9.0	0.0	17.0	17.0
20000- 25000	25000	6.0S	10.5	2.5S	8.0	6.5S	11.0	11.0
25000- 30000	30000	0.0	14.0	0.0	15.0	5.0	14.0	14.0
30000- 35000	35000	2.5N	15.0	0.0	13.0	6.0N	16.0	16.0
35000- 40000	40000	2.5	13.0	0.0	13.0	0.0	17.0	17.0
40000- 45000	45000	0.0	9.0	5.0S	13.0	7.0S	19.5	19.5
45000- 50000	50000	7.0S	19.0	5.0	13.0	13.0	15.5	15.5
50000- 60000	60000	3.5	18.5	0.0	17.0	3.0N	17.5	17.5
60000- 70000	70000	4.0	21.5	0.0	20.0	0.0	23.0	23.0
70000- 80000	80000	0.0	28.0	0.0	27.0	0.0	28.0	28.0
80000- 90000	90000	0.0	26.0	0.0	22.0	5.5N	31.5	31.5
90000-100000	100000	0.0	28.0	0.0	34.0	0.0	28.0	28.0

TABLE V. UPPER AIR DATA
(4,000-20,000 FT)
AEROBEE NASA 4.144 DG
(NRL NB 3.165)

TABLE VI. UPPER AIR DATA (4,000-100,000 FT)
AEROBEE NASA 4.144 DG (NRL NB 3.165)

STATION ALTITUDE 3989.0 FEET MST
 18 JULY 66 1445 HR; MST
 ASCENSION NO. 541

UPPER AIR DATA
 3919906
 WHITE SANDS SITE
 TABLE VII

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES, CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER KNOTS	DIRECTION DEGREES(1N)	WIND SPEED KNOTS	INDEX OF REFRACTION
3989.0	878.1	34.8	13.1	27.0	987.1	685.5	120.0
4000.0	877.8	34.8	13.0	26.8	986.9	685.4	120.0
4500.0	863.1	32.7	5.4	18.1	979.3	682.3	122.3
5000.0	848.2	31.1	5.8	20.3	967.2	680.6	124.5
5500.0	833.6	29.6	6.1	22.7	955.3	678.9	126.8
6000.0	819.3	28.0	6.2	25.1	943.6	677.2	129.0
6500.0	805.1	26.5	6.2	27.4	932.1	675.5	131.3
7000.0	791.3	24.9	6.1	29.8	920.8	673.7	129.7
7500.0	777.6	23.3	5.8	32.1	909.7	672.0	126.6
8000.0	764.2	21.8	5.5	34.5	898.8	670.2	121.0
8500.0	751.1	20.2	5.0	36.8	888.1	668.4	113.9
9000.0	738.1	18.7	4.5	39.2	877.5	666.6	97.4
9500.0	725.4	17.1	4.0	41.6	867.1	664.8	83.7
10000.0	712.5	15.8	2.8	41.6	855.7	663.2	75.5
10500.0	699.8	14.6	1.6	41.1	844.2	661.8	71.1
11000.0	687.3	13.4	0.3	40.6	832.8	660.3	68.8
11500.0	675.1	12.2	-0.9	40.1	821.6	658.8	70.1
12000.0	662.8	10.8	-1.4	42.4	810.7	657.2	71.0
12500.0	650.8	9.4	-1.7	45.6	800.0	655.5	71.3
13000.0	638.9	8.0	-2.1	48.8	789.5	653.8	70.7
13500.0	627.3	6.5	-2.6	52.1	779.2	652.2	69.4
14000.0	615.8	5.5	-4.5	48.4	767.9	650.8	64.0
14500.0	604.4	4.6	-7.2	41.9	756.4	649.7	57.8
15000.0	593.2	3.8	-9.9	36.2	745.0	648.6	50.3
15500.0	582.2	2.9	-11.9	32.9	733.7	647.4	43.8
16000.0	571.3	2.0	-14.0	29.6	722.5	646.3	37.8
16500.0	560.6	1.1	-16.2	26.3	711.5	645.2	35.7
17000.0	550.1	0.2	-18.6	23.0	700.6	644.1	34.7
17500.0	539.8	-0.7	-17.1	27.7	689.4	643.1	35.2
18000.0	529.6	-1.5	-14.7	35.9	678.3	642.2	38.7

STATION ALTITUDE 3989.0 FEET MSL
18 JULY 66 1445 HRS MST
ASCENSION NO. 541

UPPER AIR DATA
3919906
WHITE SANDS SITE
TABLE VII (Cont.)

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND KNOTS	WIND SPEED KNOTS	WIND DIRECTION DEGREES(TN)	INDEX OF REFRACTION
18500.0	519.6	-2.3	-12.9	44.0	667.3	641.3	43.3	10.8
19000.0	509.7	-3.3	-17.3	33.1	657.3	640.0	49.6	9.3
19500.0	500.0	-4.2	-12.9	50.8	646.6	639.1	56.8	8.4
20000.0	490.4	-5.2	-19.8	30.8	637.1	637.7	65.2	8.2
20500.0	480.9	-6.3	-18.6	37.3	627.2	636.4	71.1	7.9
21000.0	471.7	-7.4	-17.7	43.8	617.6	635.1	75.3	7.5
21500.0	462.5	-8.5	-17.1	50.3	608.1	633.9	81.4	7.5
22000.0	453.6	-9.6	-16.6	56.8	598.8	632.6	88.4	7.6
22500.0	444.7	-10.7	-17.5	57.6	589.6	631.3	95.8	7.7
23000.0	436.0	-11.7	-18.6	57.1	580.5	629.9	103.3	7.8
23500.0	427.5	-12.0	-23.5	38.1	569.9	629.5	108.9	8.3
24000.0	419.1	-12.4	-29.0	23.9	559.7	628.9	113.6	8.9
24500.0	410.6	-13.5	-30.5	22.6	550.7	627.6	115.3	9.2
25000.0	402.4	-14.6	-31.1	23.2	541.9	626.3	114.8	9.3
25500.0	394.3	-15.7	-31.8	23.9	533.3	624.9	111.7	9.0
26000.0	386.3	-16.8	-32.5	24.5	524.8	623.6	113.0	9.6
26500.0	378.5	-17.9	-33.1	25.2	516.4	622.3	116.0	10.6
27000.0	370.9	-19.0	-33.8	25.8	508.2	620.9	117.7	12.5
27500.0	363.4	-20.1	-34.6	26.5	500.1	619.6	119.3	14.2
28000.0	356.1	-21.2	-35.3	27.1	492.2	618.2	120.1	15.2
28500.0	348.9	-22.3	-36.0	27.8	484.4	616.8	119.1	15.8
29000.0	341.9	-23.4	-36.7	28.4	476.7	615.5	113.3	15.4
29500.0	335.0	-24.5	-37.4	29.3	469.2	614.1	107.1	15.0
30000.0	328.0	-25.7	-37.9	31.2	461.6	612.6	99.6	14.3
30500.0	321.1	-26.9	-38.4	33.1	454.2	611.1	92.3	14.1
31000.0	314.4	-28.1	-38.9	35.0	446.9	609.6	85.5	15.0
31500.0	307.9	-29.3	-39.5	36.9	439.7	608.1	80.4	15.9
32000.0	301.4	-30.5	-40.5	37.3	432.6	606.7	79.7	16.8
32500.0	294.9	-31.6	-42.0	35.5	425.4	605.2	79.0	17.4
33000.0	288.6	-32.5	-43.5	33.6	418.3	603.8	78.2	17.6

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1445 HRS MST
 ASCENSION NO. 541

UPPER AIR DATA
 3919906
 WHITE SANDS SITE
 TABLE VII (Cont)

WSTM SITE COORDINATES
 E 488.580 FEET
 N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
33500.0	282.5	-33.9	-45.1	31.8	411.3	602.3	77.5 17.6
34000.0	276.4	-35.0	-46.6	30.0	404.5	600.9	77.7 16.9
34500.0	270.5	-36.2	-48.2	28.2	397.7	599.4	77.5 16.3
35000.0	264.7	-37.4	-50.5	24.4	391.1	597.9	75.3 15.4
35500.0	258.8	-38.6	-53.0	20.6**	384.4	596.4	73.1 14.6
36000.0	253.1	-39.8	-55.8	16.7**	377.9	594.8	72.6 14.2
36500.0	247.5	-41.0	-58.9	12.8**	371.5	593.3	72.1 13.7
37000.0	242.0	-42.2	-62.7	8.9**	365.2	591.7	75.2 13.8
37500.0	236.7	-43.4	-67.8	5.0**	359.0	590.2	78.5 13.9
38000.0	231.5	-44.7	-78.7	1.1**	352.9	588.6	83.3 14.4
38500.0	226.2	-45.6	0.	-0.**	346.5	587.3	88.3 15.0
39000.0	221.1	-46.5	0.	-0.**	339.9	586.2	91.0 14.9
39500.0	216.1	-47.4	0.	-0.**	333.5	585.0	93.2 14.5
40000.0	211.2	-48.3	0.	-0.**	327.2	583.9	91.2 13.6
40500.0	206.4	-49.2	0.	-0.**	321.0	582.8	88.0 12.6
41000.0	201.7	-50.1	0.	-0.**	315.1	581.5	84.8 11.6
41500.0	196.9	-51.4	0.	-0.**	309.3	579.9	81.7 10.6
42000.0	192.3	-52.6	0.	-0.**	303.7	578.3	83.4 10.0
42500.0	187.7	-53.8	0.	-0.**	298.2	576.7	86.5 9.6
43000.0	183.3	-55.0	0.	-0.**	292.8	575.1	91.7 9.3
43500.0	179.0	-56.2	0.	-0.**	287.5	573.5	98.6 9.0
44000.0	174.8	-57.4	0.	-0.**	282.3	571.9	103.9 8.8
44500.0	170.7	-58.6	0.	-0.**	277.2	570.3	104.5 8.7
45000.0	166.7	-59.8	0.	-0.**	272.2	568.7	105.1 8.6
45500.0	162.7	-61.1	0.	-0.**	267.3	567.1	99.5 9.0
46000.0	158.8	-62.1	0.	-0.**	262.2	565.6	92.3 9.7
46500.0	154.9	-63.1	0.	-0.**	257.0	564.3	86.9 11.1
47000.0	151.1	-64.1	0.	-0.**	251.9	562.9	84.1 13.5
47500.0	147.4	-65.1	0.	-0.**	246.9	561.6	81.8 15.8
48000.0	143.8	-66.1	0.	-0.**	242.0	560.3	82.5 17.3

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
18 JULY 66 1445 HRS MST
ASCENSION NO. 541

UPPER AIR DATA
3919906
WHITE SANDS SITE
TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
48500.0	140.3	-67.1	0.	-0. **	237.2	558.9	83.3	1.000053
49000.0	136.8	-67.8	0.	-0. **	232.0	558.0	88.4	1.000052
49500.0	133.3	-68.4	0.	-0. **	226.9	557.1	93.5	1.000051
50000.0	129.9	-69.1	0.	-0. **	221.9	556.2	99.0	1.000049
50500.0	126.7	-69.7	0.	-0. **	216.9	555.3	104.6	1.000048
51000.0	123.5	-70.4	0.	-0. **	212.1	554.4	109.4	1.000047
51500.0	120.3	-71.0	0.	-0. **	207.4	553.6	113.9	1.000046
52000.0	117.3	-71.7	0.	-0. **	202.8	552.7	117.3	1.000045
52500.0	114.3	-72.3	0.	-0. **	198.4	551.8	119.2	1.000044
53000.0	111.4	-73.0	0.	-0. **	194.0	550.9	121.2	1.000043
53500.0	108.6	-73.6	0.	-0. **	189.7	550.0	123.3	1.000042
54000.0	105.9	-74.3	0.	-0. **	185.5	549.1	125.2	1.000041
54500.0	103.2	-73.9	0.	-0. **	180.5	549.6	121.4	1.000040
55000.0	100.6	-73.1	0.	-0. **	175.2	550.7	117.6	1.000039
55500.0	98.0	-72.3	0.	-0. **	170.0	551.9	115.0	1.000038
56000.0	95.6	-71.4	0.	-0. **	165.1	553.0	112.3	1.000037
56500.0	93.1	-70.6	0.	-0. **	160.2	554.2	113.5	1.000036
57000.0	90.8	-69.8	0.	-0. **	155.5	555.3	115.2	1.000035
57500.0	88.5	-68.9	0.	-0. **	151.0	556.4	117.4	1.000034
58000.0	86.3	-68.1	0.	-0. **	146.6	557.6	120.0	1.000033
58500.0	84.1	-67.4	0.	-0. **	142.5	558.5	121.8	1.000032
59000.0	82.1	-66.7	0.	-0. **	138.5	559.4	119.5	1.000031
59500.0	80.1	-66.1	0.	-0. **	134.7	560.4	117.2	1.000030
60000.0	78.1	-65.4	0.	-0. **	131.0	561.3	104.6	1.000029
60500.0	76.2	-64.7	0.	-0. **	127.3	562.2	89.4	1.000028
61000.0	74.3	-64.0	0.	-0. **	123.8	563.1	76.9	1.000028
61500.0	72.5	-63.3	0.	-0. **	120.4	564.0	66.5	1.000027
62000.0	70.7	-62.7	0.	-0. **	117.1	564.9	59.8	1.000026
62500.0	69.0	-62.0	0.	-0. **	113.8	565.8	59.9	1.000025
63000.0	67.3	-61.3	0.	-0. **	110.7	566.7	60.9	1.000025

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
18 JULY 66 1445 HRS MST
ASCENSION NO. 541

UPPER AIR DATA
3919906
WHITE SANDS SITE
TABLE VII (Cont)

WSTM SITE COORDINATES
E 488.580 FEET
N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE			RELATIVE HUMIDITY GM/CUBIC	SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
		AIR DEWPOINT DEGREES	CENTIGRADE DEGREES	PERCENT					
63500.0	65.7	-60.9	0.	-0.	**	107.8	567.3	67.6	1.000024
64000.0	64.1	-60.5	0.	-0.	**	105.1	567.7	74.4	1.000023
64500.0	62.6	-60.2	0.	-0.	**	102.4	568.2	81.2	1.000023
65000.0	61.1	-59.8	0.	-0.	**	99.8	568.7	88.0	1.000022
65500.0	59.7	-59.5	0.	-0.	**	97.3	569.2	91.8	1.000022
66000.0	58.2	-59.1	0.	-0.	**	94.8	569.7	93.6	1.000021
66500.0	56.9	-58.8	0.	-0.	**	92.4	570.1	95.6	1.000021
67000.0	55.5	-58.4	0.	-0.	**	90.0	570.6	98.1	1.000020
67500.0	54.2	-58.0	0.	-0.	**	87.8	571.1	100.7	1.000020
68000.0	52.9	-57.7	0.	-0.	**	85.5	571.6	101.5	1.000019
68500.0	51.6	-57.3	0.	-0.	**	83.4	572.0	102.1	1.000019
69000.0	50.4	-57.0	0.	-0.	**	81.2	572.5	100.6	20.9
69500.0	49.2	-56.6	0.	-0.	**	79.2	573.0	97.8	1.000018
70000.0	48.0	-56.2	0.	-0.	**	77.2	573.5	95.1	21.8
70500.0	46.9	-55.9	0.	-0.	**	75.2	573.9	92.6	22.0
71000.0	45.8	-55.6	0.	-0.	**	73.3	574.4	90.1	23.0
71500.0	44.7	-55.3	0.	-0.	**	71.5	574.7	89.2	24.0
72000.0	43.7	-55.1	0.	-0.	**	69.8	575.0	88.5	24.9
72500.0	42.7	-54.8	0.	-0.	**	68.1	575.4	88.9	25.8
73000.0	41.7	-54.6	0.	-0.	**	66.5	575.7	90.6	26.4
73500.0	40.7	-54.3	0.	-0.	**	64.9	576.0	92.3	26.0
74000.0	39.8	-54.1	0.	-0.	**	63.3	576.4	94.1	26.7
74500.0	38.9	-53.8	0.	-0.	**	61.8	576.7	95.9	26.7
75000.0	38.0	-53.6	0.	-0.	**	60.3	577.0	96.6	26.8
75500.0	37.1	-53.3	0.	-0.	**	58.8	577.3	96.2	26.7
76000.0	36.3	-53.1	0.	-0.	**	57.4	577.7	95.8	26.7
76500.0	35.4	-52.8	0.	-0.	**	56.0	578.0	95.3	26.8
77000.0	34.6	-52.6	0.	-0.	**	54.7	578.3	94.9	28.1
77500.0	33.8	-52.3	0.	-0.	**	53.3	578.7	93.6	28.9
78000.0	33.0	-52.1	0.	-0.	**	52.1	579.0	91.8	29.7

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1445 HRS MST
 ASCENSION NO. 541

UPPER AIR DATA
 3919906
 WHITE SANDS SITE
 TABLE VII (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
78500.0	32.3	-51.8	0°	~0. **	50.8	579.3	90.3	30.6	1.000011
79000.0	31.5	-51.6	C°	-0. **	49.6	579.6	91.2	31.1	1.000011
79500.0	30.8	-51.3	C°	-0. **	48.4	580.0	92.2	31.6	1.000011
80000.0	30.1	-51.1	0°	-0. **	47.2	580.3	92.2	31.6	1.000011
80500.0	29.4	-50.8	0°	-0. **	46.1	580.6	91.7	31.4	1.000010
81000.0	28.7	-50.6	0°	-0. **	44.9	580.9	91.5	30.9	1.000010
81500.0	28.1	-50.3	0°	-0. **	43.9	581.3	93.0	29.3	1.000010
82000.0	27.4	-50.1	0°	-0. **	42.8	581.6	94.4	27.7	1.000010
82500.0	26.8	-49.8	0°	-0. **	41.8	581.9	93.9	26.1	1.000009
83000.0	26.2	-49.6	0°	-0. **	40.8	582.2	91.8	24.7	1.000009
83500.0	25.6	-49.3	0°	-0. **	39.8	582.6	89.7	23.2	1.000009
84000.0	25.0	-49.1	0°	-0. **	38.8	582.9	90.1	22.9	1.000009
84500.0	24.4	-48.8	0°	-0. **	37.9	583.2	91.3	22.9	1.000008
85000.0	23.8	-48.6	0°	-0. **	37.0	583.5	92.4	22.9	1.000008
85500.0	23.3	-48.3	0°	-0. **	36.1	583.9	91.9	25.1	1.000008
86000.0	22.7	-48.1	0°	-0. **	35.2	584.2	91.5	27.2	1.000008
86500.0	22.2	-47.8	0°	-0. **	34.4	584.5	91.6	29.2	1.000008
87000.0	21.7	-47.1	0°	-0. **	33.5	585.4	93.9	30.5	1.000007
87500.0	21.2	-46.2	0°	-0. **	32.6	586.6	96.1	31.8	1.000007
88000.0	20.8	-45.2	C°	-0. **	31.7	587.9	96.6	32.7	1.000007
88500.0	20.3	-44.2	0°	-0. **	30.9	589.2	94.9	32.9	1.000007
89000.0	19.8	-43.6	0°	-0. **	30.1	590.0	93.1	33.1	1.000007
89500.0	19.4	-43.5	0°	-0. **	29.4	590.0	91.5	32.5	1.000007
90000.0	19.0	-43.5	0°	-0. **	28.8	590.1	90.0	31.3	1.000006
90500.0	18.5	-43.4	0°	-0. **	28.1	590.2	88.5	30.1	1.000006
91000.0	18.1	-43.4	0°	-0. **	27.5	590.2	86.5	29.5	1.000006
91500.0	17.7	-43.3	0°	-0. **	26.9	590.3	84.4	29.1	1.000006
92000.0	17.3	-43.3	0°	-0. **	26.3	590.3	82.3	28.7	1.000006
92500.0	17.0	-43.2	0°	-0. **	25.7	590.4	83.1	28.7	1.000006
93000.0	16.6	-43.2	0°	-0. **	25.1	590.5	84.6	28.7	1.000006

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1445 HRS MST
 ASCENSION NO. 541

UPPER AIR DATA
 3919906
 WHITE SANDS SITE
 TABLE VII (Cont)

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY GM/CUBIC PERCENT	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
					DIRECTION DEGREES(TN)	SPEED KNOTS	
93500.0	16.2	-43.1	0.	**	24.6	590.5	86.1
94000.0	15.8	-43.1	0.	**	24.0	590.6	87.6
94500.0	15.5	-43.0	0.	**	23.5	590.7	89.2
95000.0	15.2	-43.0	0.	**	22.9	590.7	90.7
95500.0	14.8	-42.9	0.	**	22.4	590.8	91.2
96000.0	14.5	-42.9	0.	**	21.9	590.9	91.6
96500.0	14.2	-42.6	0.	**	21.4	591.3	92.0
97000.0	13.9	-42.3	0.	**	20.9	591.7	92.0
97500.0	13.6	-41.9	0.	**	20.4	592.1	92.0
98000.0	13.3	-41.6	0.	**	20.0	592.5	92.0
98500.0	13.0	-41.3	0.	**	19.5	592.9	92.0
99000.0	12.7	-41.0	0.	**	19.0	593.3	92.0
99500.0	12.4	-40.7	0.	**	18.6	593.7	92.5
100000.0	12.1	-40.4	0.	**	18.2	594.1	93.9
100500.0	11.9	-40.0	0.	**	17.7	594.5	95.3
101000.0	11.6	-39.7	0.	**	17.3	594.9	96.1
101500.0	11.4	-39.4	0.	**	16.9	595.3	96.3
102000.0	11.1	-39.1	0.	**	16.5	595.7	96.5
102500.0	10.9	-38.8	0.	**	16.2	596.1	96.7
103000.0	10.6	-38.5	0.	**	15.8	596.5	96.8
103500.0	10.4	-38.1	0.	**	15.4	596.9	97.0
104000.0	10.2	-37.8	0.	**	15.1	597.3	91.6
104500.0	9.9	-37.5	0.	**	14.7	597.7	83.3
105000.0	9.7	-37.1	0.	**	14.4	598.2	74.9
105500.0	9.5	-36.7	0.	**	14.0	598.8	69.5
106000.0	9.3	-36.2	0.	**	13.7	599.4	64.8
106500.0	9.1	-35.7	0.	**	13.4	600.0	60.5
107000.0	8.9	-35.2	0.	**	13.1	600.6	62.5
107500.0	8.7	-34.7	0.	**	12.8	601.2	64.4
108000.0	8.6	-34.2	0.	**	12.5	601.9	67.4

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

SATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1445 HRS MST
 ASCENSION NO. 541

UPPER AIR DATA
 3919906
 WHITE SANDS SITE
 TABLE VII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE			RELATIVE HUMIDITY GM/CUBIC	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT DEGREES	CENTIGRADE DEGREES			DIRECTION DEGREES(TN)	SPEED KNOTS	
108500.0	8.4	-33.7	0.	-0.	**	602.5	72.4	33.0	1.000003
109000.0	8.2	-33.3	0.	-0.	**	11.9	603.1	77.4	1.000003
109500.0	8.0	-32.8	0.	-0.	**	11.6	603.7	81.1	1.000003
110000.0	7.9	-32.3	0.	-0.	**	11.4	604.3	83.9	1.000003
110500.0	7.7	-31.8	0.	-0.	**	11.1	604.9	86.7	1.000002
111000.0	7.5	-31.3	0.	-0.	**	10.8	605.5	1.000002	
111500.0	7.4	-30.8	0.	-0.	**	10.6	606.1	1.000002	
112000.0	7.2	-30.4	0.	-0.	**	10.3	606.7	1.000002	
112500.0	7.1	-29.9	0.	-0.	**	10.1	607.3	1.000002	
113000.0	6.9	-29.4	0.	-0.	**	9.9	607.9	1.000002	
113500.0	6.8	-28.9	0.	-0.	**	9.6	608.5	1.000002	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1730 HRS MST
 ASCENSION NO. 542

UPPER AIR DATA
 3919905
 WHITE SANDS SITE
 TABLE VIII

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER KNOTS	WIND DATA		INDEX OF REFRACTION
					DIRECTION DEGREES (TN)	SPEED KNOTS	
3989.0	876.2	34.4	13.3	28.0	986.1	685.1	1.000281
4000.0	875.9	34.4	13.3	28.0	985.8	685.1	1.000281
4500.0	861.0	32.9	12.3	28.5	974.0	683.3	1.000275
5000.0	846.4	31.4	11.3	29.0	962.4	681.6	1.000269
5500.0	832.0	30.0	10.3	29.5	950.8	679.9	1.000264
6000.0	817.8	28.5	9.3	30.0	939.5	678.1	1.000258
6500.0	803.9	27.1	8.3	30.5	928.3	676.4	1.000253
7000.0	790.3	25.6	7.3	31.0	917.2	674.6	1.000248
7500.0	776.8	24.1	6.2	31.5	906.3	672.9	1.000243
8000.0	763.6	22.7	5.2	32.1	895.5	671.2	1.000238
8500.0	750.2	21.1	5.0	34.9	884.6	669.3	1.000235
9000.0	737.0	19.5	4.7	37.8	873.8	667.5	1.000232
9500.0	724.1	17.9	4.3	40.6	863.2	665.7	1.000230
10000.0	711.4	16.3	3.8	43.4	852.8	663.8	1.000226
10500.0	698.8	14.7	3.3	46.4	842.4	662.0	1.000223
11000.0	686.3	13.2	3.3	51.0	831.5	660.3	1.000221
11500.0	673.9	11.7	3.2	55.6	820.8	658.6	1.000219
12000.0	661.8	10.2	2.9	60.2	810.2	656.9	1.000216
12500.0	649.9	8.9	2.2	62.6	799.5	655.3	1.000212
13000.0	638.0	8.1	-0.4	55.1	787.5	654.2	1.000204
13500.0	626.3	7.4	-3.1	47.5	775.7	653.1	1.000196
14000.0	614.9	6.6	-5.8	40.9	764.0	652.0	1.000189
14500.0	603.5	5.7	-7.9	37.0	752.6	650.9	1.000184
15000.0	592.3	4.8	-10.2	33.0	741.2	649.7	1.000179
15500.0	581.3	3.9	-12.6	29.1	730.1	648.6	1.000174
16000.0	570.6	3.0	-15.1	25.1	719.1	647.4	1.000170
16500.0	560.0	2.1	-18.0	21.1	708.3	646.3	1.000165
17000.0	549.6	1.0	-13.4	33.5	697.4	645.2	1.000166
17500.0	539.2	-0.2	-9.3	50.2	686.8	644.0	1.000168
18000.0	529.1	-1.1	-13.2	39.5	676.4	642.8	1.000162

STATION ALTITUDE 3989.0 FEET MSL
18 JULY 66 1730 HRS MST
ASCENSION NO. 542

UPPER AIR DATA
3919905
WHITE SANDS SITE
TABLE VIII (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(TIN)	WIND SPEED KNOTS	INDEX OF REFRACTION
18500.0	519.1	-2.1	-13.3	42.3	666.2	641.6	59.5	12.8	1.000160
19000.0	509.2	-3.3	-10.2	59.0	656.2	640.3	59.3	11.4	1.000161
19500.0	499.5	-4.4	-10.1	64.7	646.2	639.0	60.0	9.9	1.000159
20000.0	489.9	-5.3	-12.4	57.6	636.1	637.9	61.9	8.7	1.000154
20500.0	480.6	-6.1	-14.8	50.4	626.1	636.7	65.4	8.0	1.000150
21000.0	471.3	-7.4	-14.8	55.6	616.8	635.3	67.8	7.8	1.000148
21500.0	462.1	-8.6	-14.8	61.6	607.7	633.8	69.8	7.8	1.000146
22000.0	453.2	-9.9	-14.8	67.5	598.8	632.3	77.7	8.1	1.000144
22500.0	444.3	-10.8	-17.7	57.3	589.4	631.1	86.4	8.3	1.000140
23000.0	435.6	-11.5	-21.4	44.1	579.6	630.1	96.0	7.9	1.000135
23500.0	427.1	-11.9	-23.7	37.2	569.2	629.6	105.5	7.4	1.000132
24000.0	418.7	-12.4	-26.4	30.2	559.0	629.0	114.9	6.9	1.000128
24500.0	410.3	-13.2	-28.0	27.9	549.7	627.9	122.5	6.5	1.000126
25000.0	402.0	-14.4	-29.1	27.7	541.0	626.6	129.0	6.1	1.000124
25500.0	393.9	-15.5	-30.1	27.5	532.4	625.2	126.3	6.1	1.000121
26000.0	386.0	-16.6	-31.2	27.3	523.9	623.9	120.1	6.1	1.000119
26500.0	378.2	-17.7	-32.2	27.1	515.6	622.5	115.3	6.7	1.000117
27000.0	370.6	-18.8	-33.3	26.9	507.4	621.1	110.7	7.3	1.000115
27500.0	363.1	-19.9	-34.3	26.7	499.4	619.8	105.9	8.7	1.000113
28000.0	355.8	-21.0	-35.3	26.5	491.5	618.4	101.8	10.1	1.000111
28500.0	348.6	-22.1	-36.4	26.3	483.7	617.1	100.7	11.7	1.000109
29000.0	341.6	-23.2	-37.4	26.2	476.1	615.7	98.8	13.2	1.000108
29500.0	334.7	-24.3	-38.4	26.4	468.6	614.3	94.6	14.7	1.000106
30000.0	327.7	-25.7	-38.9	28.3	461.2	612.6	90.6	15.8	1.000104
30500.0	320.8	-27.0	-39.4	30.2	454.0	611.0	86.7	16.3	1.000102
31000.0	314.1	-28.3	-40.0	32.1	446.9	609.3	83.0	16.5	1.000101
31500.0	307.5	-29.7	-40.7	34.0	439.9	607.6	79.5	16.5	1.000099
32000.0	301.1	-31.0	-41.4	35.9	433.1	606.0	77.9	16.5	1.000098
32500.0	294.8	-32.3	-42.1	37.8	426.4	604.3	78.4	16.6	1.000096
33000.0	288.4	-33.3	-43.6	35.2	419.0	603.0	79.7	16.5	1.000094

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1730 HRS MST
 ASCENSION NO. 542

UPPER AIR DATA
 3919905
 WHITE SANDS SITE
 TABLE VIII (Cont)

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	RELATIVE DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(1N)	INDEX OF REFRACTION
33500.0	282.2	-34.3 -45.4	32.1	411.6	601.8	81.7	1.000092
34000.0	276.2	-35.2 -47.1	28.9	404.4	600.6	83.5	1.000091
34500.0	270.2	-36.2 -49.0	25.7	397.3	599.4	85.0	1.000089
35000.0	264.4	-37.3 -51.4	21.8**	390.5	598.0	85.8	1.000087
35500.0	258.5	-38.7 -54.8	16.8**	384.2	596.2	84.9	1.000086
36000.0	252.9	-40.1 -58.8	11.8**	378.0	594.5	84.1	1.000084
36500.0	247.3	-41.4 -64.1	6.7**	371.9	592.7	83.4	1.000083
37000.0	241.9	-42.8 -74.5	1.7**	365.9	590.9	83.2	1.000081
37500.0	236.3	-44.0 0.	-0.**	359.4	589.4	85.3	1.000080
38000.0	230.9	-45.2 0.	-0.**	352.8	587.9	87.7	1.000079
38500.0	225.5	-46.3 0.	-0.**	346.3	586.4	91.4	1.000077
39000.0	220.2	-47.5 0.	-0.**	340.0	585.0	94.5	16.0
39500.0	215.1	-48.6 0.	-0.**	333.8	583.5	95.4	15.1
40000.0	210.1	-49.7 0.	-0.**	327.7	582.0	95.4	14.3
40500.0	205.2	-50.9 0.	-0.**	321.7	580.5	91.5	13.7
41000.0	200.5	-52.0 0.	-0.**	315.8	579.0	87.8	13.0
41500.0	195.8	-53.1 0.	-0.**	310.1	577.6	84.8	12.4
42000.0	191.3	-54.3 0.	-0.**	304.4	576.1	82.9	12.3
42500.0	186.8	-55.4 0.	-0.**	298.9	574.6	82.5	13.0
43000.0	182.5	-56.5 0.	-0.**	293.5	573.1	83.5	13.4
43500.0	178.2	-57.7 0.	-0.**	288.2	571.6	86.9	13.5
44000.0	174.1	-58.8 0.	-0.**	283.0	570.0	90.3	13.7
44500.0	170.0	-60.0 0.	-0.**	277.9	568.5	93.9	13.8
45000.0	166.1	-61.1 0.	-0.**	272.9	567.0	97.3	14.0
45500.0	162.2	-62.2 0.	-0.**	268.0	565.5	99.8	13.9
46000.0	158.2	-63.3 0.	-0.**	262.7	564.1	102.3	13.8
46500.0	154.4	-64.3 0.	-0.**	257.5	562.7	102.4	14.1
47000.0	150.6	-65.4 0.	-0.**	252.5	561.3	102.5	14.5
47500.0	146.9	-66.4 0.	-0.**	247.5	559.9	100.1	16.1
48000.0	143.3	-67.4 0.	-0.**	242.6	558.5	97.8	17.7

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1730 HRS MST
 ASCENSION NO. 542

UPPER AIR DATA
 3919905
 WHITE SANDS SITE
 TABLE VIII (Cont)

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT CENTIGRADE DEGREES			RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN) KNOTS	INDEX OF REFRACTION
		0.	0.	0.					
48500.0	139.7	-68.1	0.	-0.	**	237.3	557.6	98.6	1.000053
49000.0	136.1	-68.5	0.	-0.	**	231.8	557.0	99.8	1.000052
49500.0	132.7	-68.9	0.	-0.	**	226.4	556.4	102.5	1.000050
50000.0	129.4	-69.4	0.	-0.	**	221.2	555.8	106.9	1.000049
50500.0	126.1	-69.8	0.	-0.	**	216.1	555.2	112.8	1.000048
51000.0	122.9	-70.2	0.	-0.	**	211.1	554.7	116.4	1.000047
51500.0	119.8	-70.7	0.	-0.	**	206.2	554.1	119.1	1.000046
52000.0	116.8	-71.1	0.	-0.	**	201.4	553.5	119.4	1.000045
52500.0	113.8	-71.5	0.	-0.	**	196.7	552.9	119.8	1.000044
53000.0	111.0	-72.0	0.	-0.	**	192.2	552.3	120.5	1.000043
53500.0	108.2	-72.4	0.	-0.	**	187.7	551.7	120.9	1.000042
54000.0	105.4	-72.8	0.	-0.	**	183.4	551.1	117.5	1.000041
54500.0	102.8	-73.3	0.	-0.	**	179.2	550.5	114.2	1.000040
55000.0	100.2	-72.6	0.	-0.	**	174.0	551.5	111.3	1.000039
55500.0	97.6	-71.4	0.	-0.	**	168.6	553.1	108.4	1.000038
56000.0	95.2	-70.2	0.	-0.	**	163.3	554.7	105.1	1.000036
56500.0	92.8	-70.2	0.	-0.	**	159.2	554.8	101.6	1.000035
57000.0	90.4	-70.2	0.	-0.	**	155.2	554.7	99.4	1.000035
57500.0	88.1	-70.3	0.	-0.	**	151.4	554.6	98.7	1.000034
58000.0	85.9	-70.3	0.	-0.	**	147.6	554.5	96.7	1.000033
58500.0	83.8	-70.4	0.	-0.	**	143.9	554.5	91.9	1.000032
59000.0	81.7	-67.4	0.	-0.	**	138.3	558.5	86.5	1.000031
59500.0	79.7	-63.6	0.	-0.	**	132.4	563.7	77.6	1.000029
60000.0	77.7	-63.3	0.	-0.	**	129.1	564.0	68.7	1.000029
60500.0	75.8	-63.1	0.	-0.	**	125.8	564.3	68.6	1.000028
61000.0	74.0	-62.9	0.	-0.	**	122.7	564.6	68.8	1.000027
61500.0	72.2	-62.7	0.	-0.	**	119.6	564.9	71.4	1.000027
62000.0	70.5	-62.5	0.	-0.	**	116.5	565.2	74.8	1.000026
62500.0	68.8	-62.3	0.	-0.	**	113.6	565.5	78.9	1.000025
63000.0	67.1	-62.0	0.	-0.	**	110.7	565.8	83.8	1.000025

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
18 JULY 66 1730 HRS MST
ASCENSION NO. 542

UPPER AIR DATA
391905
WHITE SANDS SITE
TABLE VIII (Cont.)

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER	INDEX OF REFRACTION	WIND DATA	
						DIRECTION DEGREES (TN)	KNOTS
63500.0	65.5	-61.8	0.	-0.	**	107.9	566.0
64000.0	63.9	-61.6	0.	-0.	**	105.2	566.3
64500.0	62.3	-61.4	0.	-0.	**	102.6	566.6
65000.0	60.8	-61.2	0.	-0.	**	100.0	566.9
65500.0	59.4	-61.0	0.	-0.	**	97.5	567.2
66000.0	57.9	-59.9	0.	-0.	**	94.6	568.7
66500.0	56.6	-58.5	0.	-0.	**	91.8	570.5
67000.0	55.2	-57.1	0.	-0.	**	89.0	572.3
67500.0	53.9	-56.9	0.	-0.	**	86.8	572.6
68000.0	52.6	-56.8	0.	-0.	**	84.8	572.7
68500.0	51.4	-56.8	0.	-0.	**	82.8	572.7
69000.0	50.2	-56.8	0.	-0.	**	80.8	572.8
69500.0	49.0	-56.7	0.	-0.	**	78.9	572.8
70000.0	47.8	-56.7	0.	-0.	**	77.0	572.9
70500.0	46.7	-56.7	0.	-0.	**	75.2	572.9
71000.0	45.6	-56.6	0.	-0.	**	73.4	573.0
71500.0	44.5	-56.6	0.	-0.	**	71.6	573.0
72000.0	43.5	-56.6	0.	-0.	**	69.9	573.1
72500.0	42.5	-56.5	0.	-0.	**	68.3	573.1
73000.0	41.5	-56.5	0.	-0.	**	66.7	573.1
73500.0	40.5	-56.5	0.	-0.	**	65.1	573.2
74000.0	39.5	-56.4	0.	-0.	**	63.5	573.2
74500.0	38.6	-56.2	0.	-0.	**	62.0	573.6
75000.0	37.7	-55.7	0.	-0.	**	60.4	574.2
75500.0	36.8	-55.2	0.	-0.	**	58.9	574.8
76000.0	36.0	-54.7	0.	-0.	**	57.4	575.5
76500.0	35.1	-54.2	0.	-0.	**	55.9	576.1
77000.0	34.3	-53.7	0.	-0.	**	54.5	576.8
77500.0	33.5	-53.2	0.	-0.	**	53.1	577.4
78000.0	32.7	-52.7	0.	-0.	**	51.8	578.1

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
18 JULY 66 1730 HRS MST
ASCENSION NO. 542

UPPER AIR DATA
3919905
WHITE SANDS SITE
TABLE VIII (Cont)

WSTM SITE COORDINATES
E 488, 580 FEET
N 185, 045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEWPONT CENTIGRADE	RELATIVE HUMIDITY PERCENT	GM/CUBIC METER	SOUND KNOTS	WIND DATA		INDEX OF REFRACTION	
							DIRECTION DEGREES(TN)	SPEED KNOTS		
78500.0	32.0	-52.2	0.	**	50.4	578.7	90.7	30.3	1.000011	
79000.0	31.2	-51.8	0.	**	49.2	579.4	91.6	31.4	1.000011	
79500.0	30.5	-51.3	0.	**	47.9	580.0	92.2	32.4	1.000011	
80000.0	29.8	-50.8	0.	**	46.7	580.7	92.5	33.5	1.000010	
80500.0	29.1	-50.3	0.	**	45.5	581.3	92.2	34.2	1.000010	
81000.0	28.5	-49.5	0.	**	44.3	582.3	90.0	33.9	1.000010	
81500.0	27.8	-48.7	0.	**	43.2	583.3	87.8	33.7	1.000010	
82000.0	27.2	-47.9	0.	**	42.1	584.4	87.2	33.4	1.000009	
82500.0	26.6	-47.1	0.	**	41.0	585.4	87.2	33.1	1.000009	
83000.0	26.0	-46.3	0.	**	39.9	586.5	87.1	32.8	1.000009	
83500.0	25.4	-45.5	0.	**	38.9	587.5	87.0	32.0	1.000009	
22	84000.0	24.8	-44.7	0.	**	37.8	588.6	86.9	31.3	1.000008
	84500.0	24.3	-43.9	0.	**	36.9	589.6	87.1	30.5	1.000008
	85000.0	23.7	-43.7	0.	**	36.0	589.8	87.9	29.5	1.000008
	85500.0	23.2	-44.1	0.	**	35.3	589.3	88.7	28.5	1.000008
	86000.0	22.7	-44.5	0.	**	34.5	588.8	88.9	27.8	1.000008
	86500.0	22.1	-44.9	0.	**	33.8	588.3	88.9	27.2	1.000008
	87000.0	21.7	-45.3	0.	**	33.1	587.8	89.0	26.6	1.000007
	87500.0	21.2	-45.7	0.	**	32.4	587.3	89.6	25.7	1.000007
	88000.0	20.7	-46.1	0.	**	31.7	586.7	90.2	24.8	1.000007
	88500.0	20.2	-46.5	0.	**	31.1	586.2	91.4	24.1	1.000007
	89000.0	19.8	-46.9	0.	**	30.4	585.7	93.5	23.6	1.000007
	89500.0	19.3	-47.3	0.	**	29.8	585.2	95.6	23.0	1.000007
	90000.0	18.9	-47.7	0.	**	29.2	584.7	95.1	22.2	1.000006
	90500.0	18.5	-48.1	0.	**	28.6	584.2	93.8	21.3	1.000006
	91000.0	18.1	-48.4	0.	**	28.0	583.7	92.8	20.5	1.000006
	91500.0	17.6	-48.1	0.	**	27.3	584.1	94.6	20.3	1.000006
	92000.0	17.3	-47.7	0.	**	26.7	584.7	96.3	20.2	1.000006
	92500.0	16.9	-47.2	0.	**	26.0	585.3	96.5	20.4	1.000006
	93000.0	16.5	-46.8	0.	**	25.4	585.9	94.8	21.1	1.000006

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 1730 HRS MST
 ASCENSION NO. 542

UPPER AIR DATA
 391905
 WHITE SANDS SITE
 TABLE VIII (Cont.)

WSTM SITE COORDINATES
 E 488.580 FEET
 N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER	WIND DATA		INDEX OF REFRACTION
						GM/CUBIC	KNOTS	
93500.0	16.1	-46.3	0.	-0. **	24.8	586.5	93.1	21.8
94000.0	15.8	-45.8	0.	-0. **	24.2	587.0	94.6	23.6
94500.0	15.4	-45.4	0.	-0. **	23.6	587.6	96.9	25.8
95000.0	15.1	-44.9	0.	-0. **	23.0	588.2	98.9	28.0
95500.0	14.7	-44.5	0.	-0. **	22.4	588.8	96.9	29.4
96000.0	14.4	-44.0	0.	-0. **	21.9	589.4	95.0	30.9
96500.0	14.1	-43.6	0.	-0. **	21.4	590.0	94.2	33.0
97000.0	13.8	-43.1	0.	-0. **	20.8	590.5	94.9	36.1
97500.0	13.5	-42.7	0.	-0. **	20.3	591.1	95.6	39.1
98000.0	13.2	-42.2	0.	-0. **	19.8	591.7		1.000004
98500.0	12.9	-41.2	0.	-0. **	19.3	593.1		1.000004
99000.0	12.6	-39.5	0.	-0. **	18.8	595.2		1.000004
99500.0	12.3	-37.8	0.	-0. **	18.2	597.4		1.000004
100000.0	12.0	-36.1	0.	-0. **	17.7	599.6		1.000004

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 18 JULY 66 2045 HRS MST
 ASCENSION NO. 544

UPPER AIR DATA
 3919907
 WHITE SANDS SITE
 TABLE IX

WSTM SITE COORDINATES
 E 488, 580 FEET
 N 185, 045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES	AIR DEWPOINT DEGREES	HUMIDITY CENTIGRADE	RELATIVE DENSITY GM/CUBIC METER	SOUND SPEED KNOTS	WIND DATA		INDEX OF REFRACTION
							DIRECTION DEGREES(TN)	SPEED KNOTS	
3989.0	877.6	29.4	12.9	36.0	1004.2	679.4	120.0	5.1	1.000285
4000.0	877.3	29.5	12.9	36.0	1003.6	679.5	120.2	5.1	1.000285
4500.0	862.4	30.4	14.5	37.8	982.6	680.9	130.1	6.7	1.000287
5000.0	847.7	29.2	14.0	39.4	970.1	679.4	140.0	8.2	1.000282
5500.0	833.3	27.9	13.5	40.9	957.7	677.9	149.9	9.8	1.000278
6000.0	819.1	26.6	12.9	42.5	945.6	676.4	159.8	11.4	1.000273
6500.0	805.1	25.3	12.3	44.0	933.6	674.9	167.8	11.3	1.000269
7000.0	791.4	24.0	11.6	45.6	921.8	673.4	174.7	10.5	1.000264
7500.0	777.6	22.7	11.0	47.5	910.1	671.8	177.4	10.2	1.000260
8000.0	764.0	21.3	10.4	49.6	898.4	670.2	179.8	9.6	1.000255
8500.0	750.6	19.9	9.7	51.6	886.9	668.6	181.6	8.8	1.000251
9000.0	737.4	18.5	9.0	53.7	875.6	667.0	183.5	7.6	1.000246
9500.0	724.4	17.2	8.3	55.7	864.5	665.3	185.5	6.2	1.000242
10000.0	711.7	15.8	7.5	57.8	853.5	663.7	184.4	4.1	1.000237
10500.0	699.2	14.4	6.7	59.8	842.7	662.0	177.7	1.9	1.000233
11000.0	686.9	13.3	5.6	59.3	831.1	660.7	93.8	1.9	1.000227
11500.0	674.5	12.4	4.5	58.3	819.2	659.5	29.3	2.3	1.000222
12000.0	662.4	11.0	3.9	61.4	808.4	657.9	25.1	3.8	1.000218
12500.0	650.4	9.7	3.6	65.5	797.6	656.3	21.9	4.8	1.000215
13000.0	638.6	8.4	3.4	70.8	786.7	654.8	20.0	5.5	1.000213
13500.0	627.0	7.0	3.1	76.1	776.1	653.3	19.8	6.3	1.000210
14000.0	615.5	5.3	1.9	78.5	766.8	651.2	21.0	7.2	1.000205
14500.0	604.1	3.7	1.7	86.5	756.8	649.3	24.5	8.2	1.000203
15000.0	592.9	2.2	1.4	94.6	747.1	647.5	29.9	9.2	1.000200
15500.0	581.8	1.2	-0.2	90.7	736.0	646.2	36.0	10.1	1.000194
16000.0	571.0	0.4	-2.3	82.6	724.9	645.1	42.4	10.9	1.000188
16500.0	560.2	-0.5	-5.2	70.6	714.0	643.8	49.7	11.5	1.000180
17000.0	549.7	-1.4	-6.6	68.0	703.0	642.7	55.9	12.1	1.000176
17500.0	539.3	-2.2	-9.2	59.1	692.0	641.6	59.5	12.7	1.000170
18000.0	529.0	-3.2	-13.0	47.1	681.8	640.2	61.4	13.6	1.000164

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UPPER AIR DATA
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 WHITE SANDS SITE
 TABLE IX (Cont)

WSTM SITE COORDINATES
 E 488.580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER KNOTS	WIND DATA		INDEX OF REFRACTION
					DENSITY GM/CUBIC	DIRECTION DEGREES(TN)	
18500.0	519.0	-4.1	-15.7	40.3	671.3	639.0	14.7
19000.0	509.0	-4.6	-15.9	41.3	659.7	638.5	15.3
19500.0	499.3	-5.3	-16.0	43.0	648.5	637.7	15.7
20000.0	489.7	-6.3	-15.9	46.6	638.4	636.6	16.1
20500.0	480.2	-7.2	-15.9	50.2	628.4	635.4	16.5
21000.0	471.0	-8.3	-15.3	57.3	618.6	634.2	16.8
21500.0	461.8	-9.6	-12.9	77.2	609.3	632.8	17.1
22000.0	452.8	-10.7	-12.3	88.2	599.9	631.5	17.4
22500.0	444.0	-11.4	-13.8	83.1	590.0	630.5	17.2
23000.0	435.3	-11.2	-17.2	61.5	578.2	630.6	16.8
23500.0	426.7	-10.9	-22.3	38.9	566.4	630.9	15.1
24000.0	418.4	-11.5	-23.0	38.1	556.6	630.1	13.4
24500.0	410.1	-12.5	-24.0	37.8	547.7	628.9	11.6
25000.0	402.0	-13.5	-25.0	37.5	539.0	627.7	11.3
25500.0	394.1	-14.5	-26.0	37.2	530.5	626.4	11.9
26000.0	386.2	-15.6	-27.1	37.0	522.0	625.1	123.7
26500.0	378.2	-16.8	-28.2	36.9	513.7	623.7	12.9
27000.0	370.5	-18.0	-29.3	36.8	505.5	622.2	128.8
27500.0	362.8	-19.2	-30.4	36.8	497.5	620.7	129.2
28000.0	355.4	-20.4	-31.5	36.7	489.6	619.2	127.3
28500.0	348.0	-21.6	-32.6	36.6	481.8	617.7	125.0
29000.0	340.9	-22.8	-33.7	36.6	474.2	616.2	120.4
29500.0	333.9	-24.0	-34.8	36.5	466.6	614.8	115.6
30000.0	327.0	-25.2	-35.9	36.4	459.3	613.3	112.2
30500.0	320.2	-26.4	-37.0	36.4	452.0	611.8	108.9
31000.0	313.7	-27.6	-38.1	36.3	444.9	610.3	108.2
31500.0	307.2	-28.8	-39.2	36.2	437.9	608.8	107.4
32000.0	300.9	-30.0	-40.4	36.1	431.0	607.3	104.9
32500.0	294.7	-31.2	-41.5	36.1	424.2	605.8	102.0
33000.0	288.6	-32.4	-42.6	36.0	417.6	604.2	95.9

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WHITE SANDS SITE
TABLE IX (Cont)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE			RELATIVE HUMIDITY PERCENT	SPEED OF SOUND KNOTS	WIND DATA			INDEX OF REFRACTION
		AIR DEPOINT	DEGREES CENTIGRADE	METER			DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION	
33500.0	282.4	-33.5	-43.6	36.1	410.5	602.8	88.6	16.2	1.000092	
34000.0	276.3	-34.7	-44.6	36.3	403.6	601.3	78.0	15.8	1.000091	
34500.0	270.3	-35.8	-45.6	36.4	396.8	599.9	69.8	16.0	1.000089	
35000.0	264.4	-37.0	-46.6	36.5	390.1	598.4	64.0	16.9	1.000087	
35500.0	258.7	-38.2	-47.7	36.7	383.5	596.9	60.2	17.2	1.000086	
36000.0	253.1	-39.3	-48.7	36.8	377.0	595.5	57.8	17.1	1.000084	
36500.0	247.6	-40.5	-49.7	37.0	370.7	594.0	58.0	16.8	1.000083	
37000.0	242.1	-41.6	-51.6	23.6**	364.2	592.5	61.0	16.2	1.000081	
37500.0	236.6	-42.8	-53.9	28.9**	357.8	591.0	65.8	15.6	1.000080	
38000.0	231.3	-43.9	-56.4	24.2**	351.6	589.5	73.2	15.0	1.000078	
38500.0	226.1	-45.1	-59.1	19.4**	345.4	588.1	80.7	14.8	1.000077	
39000.0	221.0	-46.2	-62.2	14.7**	339.3	586.6	88.7	15.2	1.000076	
39500.0	216.0	-47.4	-66.1	9.9**	333.4	585.1	95.1	15.6	1.000074	
40000.0	211.2	-48.5	-71.5	5.2**	327.6	583.6	98.4	16.1	1.000073	
40500.0	206.4	-49.7	-87.4	0.4**	321.9	582.1	101.0	16.5	1.000072	
41000.0	201.6	-50.9	0.	0.***	316.0	580.4	100.7	16.8	1.000070	
41500.0	196.8	-52.2	0.	0.***	310.3	578.8	100.2	17.1	1.000069	
42000.0	192.2	-53.4	0.	0.***	304.7	577.2	98.1	17.5	1.000068	
42500.0	187.6	-54.7	0.	0.***	299.2	575.5	95.9	17.8	1.000067	
43000.0	183.2	-55.9	0.	0.***	293.8	573.9	94.9	18.3	1.000065	
43500.0	178.8	-57.2	0.	0.***	288.5	572.3	94.3	18.8	1.000064	
44000.0	174.6	-58.4	0.	0.***	283.3	570.6	96.0	19.2	1.000063	
44500.0	170.5	-59.6	0.	0.***	278.2	569.0	98.9	19.4	1.000062	
45000.0	166.4	-60.9	0.	0.***	273.2	567.3	102.9	19.9	1.000061	
45500.0	162.5	-62.1	0.	0.***	268.3	565.6	107.4	20.4	1.000060	
46000.0	158.7	-63.4	0.	0.***	263.5	564.0	111.5	21.3	1.000059	
46500.0	154.8	-64.2	0.	0.***	258.1	562.9	115.4	22.5	1.000057	
47000.0	151.0	-64.9	0.	0.***	252.5	561.9	117.3	23.9	1.000056	
47500.0	147.2	-65.6	0.	0.***	247.1	561.0	118.5	25.5	1.000055	
48000.0	143.6	-66.3	0.	0.***	241.9	560.1	121.2	27.1	1.000054	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

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UPPER AIR DATA
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 WHITE SANDS SITE
 TABLE IX (Cont.)

WSTM SITE COORDINATES
 E 488,580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	RELATIVE HUMIDITY PERCENT	SOUND METER	INDEX OF REFRACTION	WIND DATA	
							DIRECTION DEGREES(TN)	SPEED KNOTS
48500.0	140.1	-67.0	0.	-0.	**	236.7	559.1	124.4
49000.0	136.6	-67.7	0.	-0.	**	231.6	558.2	127.7
49500.0	133.2	-68.1	0.	-0.	**	226.3	557.6	130.9
50000.0	129.9	-68.3	0.	-0.	**	220.9	557.3	132.6
50500.0	126.6	-68.5	0.	-0.	**	215.5	557.1	134.3
51000.0	123.5	-68.6	0.	-0.	**	210.3	556.8	134.4
51500.0	120.4	-68.8	0.	-0.	**	205.3	556.6	134.5
52000.0	117.4	-69.0	0.	-0.	**	200.3	556.3	129.0
52500.0	114.4	-69.2	0.	-0.	**	195.5	556.1	122.6
53000.0	111.6	-69.4	0.	-0.	**	190.7	555.8	121.6
53500.0	108.8	-69.5	0.	-0.	**	186.1	555.6	123.2
54000.0	106.0	-70.3	0.	-0.	**	182.2	554.5	122.2
54500.0	103.4	-71.4	0.	-0.	**	178.5	553.1	119.3
55000.0	100.7	-71.6	0.	-0.	**	174.2	552.7	119.4
55500.0	98.2	-71.8	0.	-0.	**	169.9	552.5	121.8
56000.0	95.7	-72.0	0.	-0.	**	165.7	552.3	122.2
56500.0	93.3	-72.1	0.	-0.	**	161.6	552.1	107.6
57000.0	90.9	-72.3	0.	-0.	**	157.7	551.8	93.1
57500.0	88.6	-72.5	0.	-0.	**	153.8	551.6	80.7
58000.0	86.3	-72.6	0.	-0.	**	150.0	551.4	74.4
58500.0	84.1	-72.8	0.	-0.	**	146.3	551.2	68.0
59000.0	82.0	-63.0	0.	-0.	**	136.0	564.5	64.7
59500.0	80.0	-63.0	0.	-0.	**	132.7	564.5	62.7
60000.0	78.1	-63.2	0.	-0.	**	129.6	564.2	62.0
60500.0	76.2	-63.4	0.	-0.	**	126.5	563.9	62.2
61000.0	74.3	-63.6	0.	-0.	**	123.6	563.7	67.1
61500.0	72.5	-63.8	0.	-0.	**	120.7	563.4	75.4
62000.0	70.7	-64.0	0.	-0.	**	117.9	563.1	82.3
62500.0	69.0	-64.2	0.	-0.	**	115.1	562.9	88.3
63000.0	67.4	-63.3	0.	-0.	**	111.9	564.0	95.4

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
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 WHITE SANDS SITE
 TABLE IX (Cont.)

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR DEGREES	TEMPERATURE DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES ITN)	WIND SPEED KNOTS	INDEX OF REFRACTION	WSTM SITE COORDINATES E 488, 580 FEET N 185, 045 FEET
63500.0	65.8	-62.4	0.	-0. **	108.7	565.3	103.6	27.6	1.000024	
64000.0	64.2	-61.5	0.	-0. **	105.7	566.5	109.6	27.4	1.000024	
64500.0	62.6	-60.6	0.	-0. **	102.7	567.7	111.8	26.2	1.000023	
65000.0	61.1	-59.7	0.	-0. **	99.8	568.9	113.0	24.9	1.000022	
65500.0	59.7	-58.8	0.	-0. **	97.0	570.1	109.4	23.0	1.000022	
66000.0	58.2	-57.9	0.	-0. **	94.3	571.2	105.8	21.2	1.000021	
66500.0	56.8	-57.0	0.	-0. **	91.6	572.4	98.7	19.9	1.000020	
67000.0	55.5	-56.1	0.	-0. **	89.1	573.6	91.4	18.7	1.000020	
67500.0	54.2	-56.0	0.	-0. **	86.9	573.8	83.7	17.7	1.000019	
68000.0	52.9	-56.3	0.	-0. **	85.0	573.4	75.9	16.8	1.000019	
68500.0	51.6	-56.6	0.	-0. **	83.1	573.0	71.6	16.9	1.000018	
69000.0	50.4	-56.9	0.	-0. **	81.2	572.7	70.3	18.0	1.000018	
69500.0	49.2	-57.1	0.	-0. **	79.4	572.3	69.7	18.9	1.000018	
70000.0	48.1	-57.4	0.	-0. **	77.6	571.9	70.4	19.6	1.000017	
70500.0	46.9	-57.7	0.	-0. **	75.9	571.5	71.9	20.6	1.000017	
71000.0	45.8	-58.0	0.	-0. **	74.2	571.1	75.7	22.5	1.000017	
71500.0	44.7	-58.3	0.	-0. **	72.5	570.7	79.5	24.4	1.000016	
72000.0	43.7	-58.3	0.	-0. **	70.8	570.7	83.1	26.2	1.000016	
72500.0	42.7	-57.7	0.	-0. **	69.0	571.5	86.7	28.0	1.000015	
73000.0	41.7	-57.2	0.	-0. **	67.2	572.3	88.1	29.8	1.000015	
73500.0	40.7	-56.6	0.	-0. **	65.5	573.0	89.4	31.6	1.000015	
74000.0	39.7	-56.0	0.	-0. **	63.8	573.8	89.2	32.9	1.000014	
74500.0	38.8	-55.4	0.	-0. **	62.1	574.6	88.8	34.2	1.000014	
75000.0	37.9	-54.8	0.	-0. **	60.5	575.3	89.1	34.1	1.000013	
75500.0	37.0	-54.3	0.	-0. **	58.9	576.1	89.7	33.4	1.000013	
76000.0	36.2	-53.7	0.	-0. **	57.4	576.8	89.8	33.0	1.000013	
76500.0	35.3	-53.1	0.	-0. **	55.9	577.6	89.6	32.8	1.000012	
77000.0	34.5	-52.5	0.	-0. **	54.5	578.4	89.6	32.0	1.000012	
77500.0	33.7	-51.9	0.	-0. **	53.1	579.1	90.0	30.3	1.000012	
78000.0	32.9	-51.4	0.	-0. **	51.7	579.9	90.4	28.6	1.000012	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
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 WHITE SANDS SITE
 TABLE IX (Cont.)

WESTN SITE COORDINATES
 E 488.580 FEET
 N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE			RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
		DEGREES	CENTIGRADE	METER						
78500.0	32.1	-50.8	0.	0.	-0. **	50.4	580.6	90.5	26.7	1.000011
79000.0	31.4	-50.2	0.	0.	-0. **	49.1	581.4	90.6	24.9	1.000011
79500.0	30.7	-49.9	0.	0.	-0. **	47.9	581.8	88.7	23.5	1.000011
80000.0	30.0	-49.8	0.	0.	-0. **	46.7	581.9	86.5	22.2	1.000010
80500.0	29.3	-49.7	0.	0.	-0. **	45.7	582.0	84.7	21.9	1.000010
81000.0	28.6	-49.6	0.	0.	-0. **	44.6	582.1	83.2	22.4	1.000010
81500.0	28.0	-49.6	0.	0.	-0. **	43.6	582.2	82.5	23.5	1.000010
82000.0	27.3	-49.5	0.	0.	-0. **	42.6	582.3	83.5	25.8	1.000009
82500.0	26.7	-49.4	0.	0.	-0. **	41.6	582.4	84.7	28.2	1.000009
83000.0	26.1	-49.4	0.	0.	-0. **	40.6	582.5	89.1	29.4	1.000009
83500.0	25.5	-49.3	0.	0.	-0. **	39.7	582.6	93.6	30.6	1.000009
84000.0	24.9	-49.2	0.	0.	-0. **	38.8	582.7	94.7	31.0	1.000009
84500.0	24.4	-49.1	0.	0.	-0. **	37.9	582.8	94.5	31.2	1.000008
85000.0	23.8	-49.1	0.	0.	-0. **	37.0	582.9	94.1	31.2	1.000008
85500.0	23.3	-49.0	0.	0.	-0. **	36.1	583.0	93.5	31.0	1.000008
86000.0	22.7	-48.9	0.	0.	-0. **	35.3	583.1	92.5	31.1	1.000008
86500.0	22.2	-48.8	0.	0.	-0. **	34.5	583.2	89.8	32.4	1.000008
87000.0	21.7	-48.8	0.	0.	-0. **	33.7	583.3	87.0	33.8	1.000007
87500.0	21.2	-48.7	0.	0.	-0. **	32.9	583.4	86.0	34.6	1.000007
88000.0	20.7	-48.6	0.	0.	-0. **	32.2	583.5	85.3	35.3	1.000007
88500.0	20.3	-48.5	0.	0.	-0. **	31.4	583.6	84.1	35.2	1.000007
89000.0	19.8	-48.3	0.	0.	-0. **	30.7	583.9	82.5	34.5	1.000007
89500.0	19.4	-47.8	0.	0.	-0. **	29.9	584.6	80.3	33.6	1.000007
90000.0	18.9	-47.3	0.	0.	-0. **	29.2	585.2	75.9	32.3	1.000006
90500.0	18.5	-46.8	0.	0.	-0. **	28.5	585.9	71.4	31.0	1.000006
91000.0	18.1	-46.3	0.	0.	-0. **	27.8	586.5	69.2	31.0	1.000006
91500.0	17.7	-45.8	0.	0.	-0. **	27.1	587.2	67.5	31.2	1.000006
92000.0	17.3	-45.3	0.	0.	-0. **	26.5	587.8	67.4	32.2	1.000006
92500.0	16.9	-44.8	0.	0.	-0. **	25.8	588.4	69.1	33.9	1.000006
93000.0	16.5	-44.3	0.	0.	-0. **	25.2	589.1	71.3	35.8	1.000006

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

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UPPER AIR DATA
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 WHITE SANDS SITE
 TABLE IX (Cont)

WSTM SITE COORDINATES
 E 488.580 FEET
 N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPOINT CENTIGRADE	RELATIVE HUMIDITY PERCENT	G/M/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
93500.0	16.2	-43.8	0°	-0°	**	24.6	589.7	75.9	38.5
94000.0	15.8	-43.3	0°	-0°	**	24.0	590.4	80.5	41.2
94500.0	15.5	-42.8	0°	-0°	**	23.4	591.0	83.7	40.7
95000.0	15.1	-42.3	0°	-0°	**	22.8	591.7	86.8	39.8
95500.0	14.8	-41.8	0°	-0°	**	22.3	592.3	87.4	38.0
96000.0	14.5	-41.3	0°	-0°	**	21.7	592.9	86.9	35.7
96500.0	14.1	-40.8	0°	-0°	**	21.2	593.6	86.6	33.0
97000.0	13.8	-40.3	0°	-0°	**	20.7	594.2	86.7	31.7
97500.0	13.5	-39.8	0°	-0°	**	20.2	594.9	1.000004	1.000004
98000.0	13.2	-39.3	0°	-0°	**	19.7	595.5	1.000004	1.000004
98500.0	12.9	-38.7	0°	-0°	**	19.2	596.1	1.000004	1.000004
99000.0	12.6	-38.2	0°	-0°	**	18.7	596.8	1.000004	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

RELEASE TIME (MST)	IMPACT DISPLACEMENT IN MILES DUE TO WIND								THEORETICAL IMPACT IN MILES FROM LAUNCHER	
	143- 4000 FT		4000- 20000 FT		20000- 100000 FT		TOTAL		N-S	E-W
RAWINSONDE	PTBAL	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	
R ₁ 1445	R 1445	P 1745	6.2S	9.2E	2.0N	5.6E	1.0S	7.9E	5.2S	22.7E
R ₁ 1445	R 1445	P 1805	6.0S	9.9E	2.0N	5.6E	1.0S	7.9E	5.0S	23.4E
R ₁ 1730	R 1445	P 1835	14.7S	16.1E	1.1N	5.4E	1.0S	7.9E	14.6S	29.4E
R ₁ 1730	R 1445	P 1855	16.6S	11.7E	1.1N	5.4E	1.0S	7.9E	16.5S	25.0E
R ₁ 1730	R 1730	P 1920	17.5S	19.8E	1.1N	5.4E	0.6S	7.5E	17.0S	32.7E
R ₁ 1730	R 1730	P 1935	21.5S	23.0E	1.1N	5.4E	0.6S	7.5E	21.0S	35.9E
R ₁ 1730	R 1730	P 1950	20.8S	22.0E	1.1N	5.4E	0.6S	7.5E	20.3S	34.9E
R ₁ 1730	R 1730	P 2005	23.3S	22.3E	1.1N	5.4E	0.6S	7.5E	22.8S	35.2E
R ₁ 1945	R 1730	P 2018	25.0S	22.7E	4.8N	1.5E	0.6S	7.5E	20.8S	31.7E
R ₁ 1945	R 1730	P 2025	27.8S	20.7E	4.8N	1.5E	0.6S	7.5E	23.6S	29.7E
R ₁ 1945	R 1730	P 2030	28.5S	22.2E	4.8N	1.5E	0.6S	7.5E	24.3S	31.2E
*R ₁ 2045	*R 2045	*P 2037	27.6S	24.8E	0.9N	6.1E	1.2S	8.4E	27.9S	39.3E

* = Post-Shoot Data
 P = Double Theodolite Winds (143-4,000 FT)
 R = Rawinsonde Winds (Above 20,000 FT)
 *R₁ = Rawinsonde Winds (4,000-20,000 FT)

TABLE X. IMPACT PREDICTION DATA
 TIME: 2036 MST
 AEROBEE NASA 4.144 DG
 DATE: 18 JULY 1966
 (NRL NB 3.165)

JACK SETTINGS FOR LAUNCHER 21A	West leg	29	inches	PREDICTED IMPACT FROM LAUNCHER	North	48.0	miles
	East leg	47	inches		West	4.0	miles
LAUNCHER SETTING	Tilt	4.53	degrees	PREDICTED BOOSTER IMPACT FROM LAUNCHER	Azimuth	345	degrees
	Azimuth	337.7	degrees		Distance	1,615	feet
TILT COMPONENTS	North	4.19	degrees	RECOMMENDATION - Fire, with 90% confidence of impacting on range, based upon: wind correction of 1-hr wind variability of			
	West	1.72	degrees	35	miles	35	miles
NO WIND IMPACT FROM LAUNCHER	North	71.4	miles		6.5	miles	
	West	34.1	miles	18 July 1966/2026 MST			

TABLE XI. ACTUAL AND PREDICTED LAUNCH DATA
AEROBEE NASA 4.144 DG (NRL NB 3.165)

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SOTIM IMPACT FROM LAUNCHER	North	42.4	miles
	West	1.6	miles
ACTUAL BOOSTER IMPACT FROM LAUNCHER	Azimuth	N/A	degrees
	distance	N/A	feet

TABLE XII. IMPACT DATA
AEROBEE NASA 4.144 DG (NRL NB 3.165)

* Sonic observation of trajectory and impact of missiles

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
1. Ballistics 2. Meteorology 3. Wind						

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